Published in final edited form as:

Convergence (Lond). 2019 ; 25(3): 393–408. doi:10.1177/1354856517703974.

Networked publics and the organizing of collective action on Twitter: Examining the #Freebassel campaign

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Abstract

This study applied collective action theories and network theories to examine the information sharing patterns among Twitter users to obtain sociopolitical legitimacy of their collective goal. The role of Twitter in facilitating private–public boundary crossing was defined in relation to main challenges of collective action. The hypotheses and research question were examined using Twitter data collected from an online campaign, which was created to bring about the release of a detained Syrian activist. Network analysis results showed significant geographic homophily effect, that is, participants located in the same region tended to share information with each other. In addition, the results indicated that more influential Twitter users tended to connect with less influential users to help spread information on the movement. Further content analysis showed that to better mobilize potential collective action participants, Twitter users utilized strategies to draw attention from citizen news media organizations, nonprofit advocacy organizations, public figures, and corporations.

Keywords

Collective action; ERGM; freebassel; online information sharing; network analysis; online campaign; social media; sociopolitical legitimacy; Twitter

Traditional collective action literature has taken an organization-centric view, with an emphasis on the role of formal organizations or leadership in coordinating resources for the collective goal (Bimber et al., 2012). With the rise of new online technologies, contrasting examples are documented to illustrate the modern faces of collective action characterized by ‘organization-less organizing’ which refers to less or no close management of a formal organization or central organizers (Bimber et al., 2012; Bennett and Segerberg, 2012; Papacharissi and Oliveira, 2012).

Although it is important to examine more decentralized and self-organized collective action, the vitality of traditional organizations has been overlooked in contemporary collective

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action (Bimber et al., 2012). Some of these organizations have utilized social media in daily operations and public relations (Zorn et al., 2012). In online collective action space, both formal and informal organizations use social media to engage with the public. The fundamental issue of collective action is not about the organizations but rather about the process of organizing (Bimber et al., 2012; Dahlberg-Grundberg, 2016).

Guided by collective action theories and network theories, this study examines how social media can be leveraged to organize collective action and facilitate mutual engagement of different social forces. Specifically, it analyzes the theoretical mechanisms that can explain the patterns of communication networks. Two network mechanisms are tested in this study. The first is *homophily*, which hypothesizes that information flow will more likely cluster around countries and regions (Singh and Jain, 2010; Takhteyev et al., 2012). Users with similar traits will also be more likely to engage in conversation (McPherson et al., 2001; Ruef et al., 2003). The second mechanism is *strategic selection*, which hypothesizes that some influential corporate, nonprofit organization, and public figure accounts are more likely to become information hubs for an online advocacy movement (Barabási, 2002; Monge and Contractor, 2003).

The results showed that geographic homophily was significant and people tend to connect to other participants for information sharing, who are mainly based in the same region. However, homophily effect based on users' influence in the Twitter community was not significant. To the contrary, more influential users tend to connect with less influential ones. The strategic selection hypothesis was supported, given that more influential users tend to receive more information ties from less influential users. Together with the finding on influence heterogeneity, this suggests that online collective action participants have utilized strategies to mobilize influential social forces to gain legitimacy of their collective goal and spread the word. A further content analysis on a subset of users showed that Twitter accounts of citizen media organizations, public figures, and nonprofit or advocacy organizations were among the most influential social actors mobilized by individual activists and advocates. Implications on collective action theories and network theories were discussed. Practical implications on strategic organizing of collective action on Twitter were also provided.

This study addresses an important gap in the current literature on social media and networked activism, which is how the technology affordances affect the achievement of legitimacy for online collective action in the process of organizing potential supporters. With data collected from an early stage of an online advocacy campaign, this study applied a network perspective to examine how homophily and preferential attachment were underlying the information sharing activities on Twitter to help spread the word about a collective cause and grow its influence. This present study makes the following contributions. First, it highlights the importance of applying a network perspective to uncover the process of organizing supporters and achieving legitimacy of a cause. Second, it demonstrates the importance of applying mixed methods to both qualitatively and quantitatively examine the process of organizing online advocacy campaign. Third, the findings suggest that to better utilize the benefits of Twitter in organizing online collective action, supporters need to pay

attention to celebrity accounts, civil society organizations accounts, and legacy media accounts.

Collective action and ‘organization-less’ organizing through social media

From Arab Spring to Occupy Wall Street to the more recent uprising in Turkey, Twitter has been at the center of a debate: Is there a Twitter revolution? In 2009, the use of Twitter in Iran helped activists to organize and coordinate massive demonstrations against a fraudulent presidential election. In 2011, hundreds and thousands of Egyptians were organized through social media to participate in protests and brought down the Mubarak dictatorship. Evidence was also documented in other countries such as the United States, where the Occupy Wall Street movement started with a hashtag #occupywallstreet on Twitter and spread to other social media platforms and off-line occupation sites. Although there is clearly an argument that Twitter does not determine the success of collective action, the attempt to block the use of Twitter in countries such as Iran and Turkey raises a question: What role did Twitter play in collective action that is facilitated by digital technologies?

Collective action and key mechanisms

Collective action is defined as the crossing of ‘well-defined and well-maintained private–public boundaries by expressing or acting on individual interest in ways observable to relevant others’ (Bimber et al., 2005: 377). The main obstacles of achieving collective goals include how to diffuse information, organize participants, and coordinate actions (Olson, 1965). Traditionally, collective action has been studied in an organizational context, with an organizational view. However, more recent cases of collective action that evolved through self-organizing among participants raise the issue of organization-less organizing (Bimber et al., 2012).

Recent literature showed that formal organizations with structures and incentives may no longer be essential to collective action (Bimber et al., 2012). A variety of collective tasks can be achieved without the existence of hierarchical structure, such as the production of open-source software (Benkler, 2006; Shaw and Hill, 2014; Von Krogh, 2002; Von Hippel and Von Krogh, 2003). The cases of self-organized collective action supported by digital technologies were also found in the advocacy context, such as the global social justice movement in New Zealand (Ganesh and Stohl, 2010), Arab feminist activism in Tunisia and Egypt (Newsom and Lengel, 2012), among others.

Literature on online collective action has argued that the capacity of social media can help solve these problems through the following mechanisms: (1) identifying people with relevant, potential interests; (2) communicating messages based on a shared vision; and (3) coordinating, integrating, or synchronizing individual contributions (Bimber et al., 2012). We apply the technology affordance approach (TAA) to elaborate how these three mechanisms can be facilitated with the use of social media.

TAA and online collective action

The affordance of a technology refers to the action potential in the relationship between the user and the technology (Fulk and Yuan, 2013). An affordance is ‘the mutuality of actor

intentions and technology capabilities that provide the potential for a particular action' (Faraj and Azad, 2012: 3), which highlights a 'symbiotic relationship between human action and technological capability' (Majchrzak et al., 2013: 3–4). Recent literature applying the TAA to social media is focused on 'what combinations of material features allow people to do things they could not do before, or to do things that were previously difficult to do without the technology' (Treem and Leonardi, 2012: 10).

Literature has identified the following key affordances of social media in the context of knowledge sharing and collaboration: visibility, editability, persistence, meta-voicing, trigger attending, network-informed association, and generative role-taking (Majchrzak et al., 2013; Treem and Leonardi, 2012). In this section, we apply relevant affordances to understand the role of Twitter in influencing online collective action, through the lens of three essential mechanisms of collective action identified by Bimber et al. (2005).

First, Twitter enhances the participants' ability to disseminate information to identify relevant peers. It functions as a powerful broadcasting tool for breaking news, providing constant updates of occupation sites to the greater public (Castells, 2012; Segerberg and Bennett, 2011). This can be explained by the affordance of visibility, which indicates that Twitter allows users to make their behavior and communication networks visible to others across explicitly differentiated social groups (Treem and Leonardi, 2012). The information visible on each user's profile includes geolocation, followers, followees, and number of tweets. Another feature to show Twitter's visibility is the use of hashtag, which is a word or a phrase prefixed with the symbol #. Hashtags function as a metatag for grouping messages. By adding hashtags in tweeting, the visibility can be enhanced as the tweet becomes more searchable than being plain texts alone (Small, 2011). Visibility is essential for identifying people with common interests, the first key mechanism of facilitating collective action through social media.

Second, Twitter facilitates potential participants to communicate based on common languages and visions. Twitter's affordance of network-informed association allows users to engage in the online conversation informed by relational and content ties (Majchrzak et al., 2013). They make new connections through the use of common hashtags, the sharing of media content such as an image or a video clip related to their collective goal, or common friends who share the same passion toward the goal. Twitter also affords generative role taking, which is defined as allowing users to engage in decentralized conversation by enacting pattern actions and taking on community-sustaining roles (Majchrzak et al., 2013). Users can mention others when tweeting, such as official Twitter accounts of influential public figures, media outlets, government organizations, or advocacy groups. They can also reply to others' tweets or repost them to engage in conversation. Through building a real-time network of communication, users are able to share collective outrage and hope based on common missions and common language (Allagui and Kuebler, 2011; Castells, 2012, 2009). The evolving nature of networks facilitates the diffusion of their goal to larger audiences and thus sustains the ongoing conversation.

Third, Twitter facilitates internal strategic coordination among collective action participants. New waves of collective action encourage the autonomy of individual participants and the

self-organized coordination of efforts without controlled by a central authority (Bimber et al., 2012). Collective action is more likely to succeed when there are latent and temporary networks to be mobilized, even with the absence of centralized formal organizations. Considering that contemporary instances of collective action are often at the global scale and geographically dispersed, the coordination issue has become increasingly important, as seen in the Egyptian and Tunisian revolutions (Lotan et al., 2011).

Twitter affords metavoicing, which refers to the action of engaging in the ongoing online conversation by reacting to others' presence, profiles, content, and activities (Majchrzak et al., 2013). It is not only about voicing opinions but also about contributing to what is already online. Retweeting, replying to, or favoriting one's tweet are examples of how Twitter can be used to direct traffic to collective goals. Twitter also affords persistence, as users can access communication in the same form as the original even if the original posters are off-line (Bregman and Haythornthwaite, 2001; Donath et al., 1999; Treem and Leonardi, 2012). Persistent conversations can be 'searched, browsed, replayed, annotated, visualized, restructured, and recontextualized, with what are likely to be profound impacts on personal, social, and institutional practices' (Erickson and Kellogg, 2000: 68, cited in Treem and Leonardi, 2012: 19). The generative role taking and network-informed association further afford users the ability to contribute to the collective goal to reach a critical mass through coordinating, integrating, or synchronizing individual's engagement and interaction.

Given its role in the three key mechanisms of collective action, Twitter can be conceptualized as a tool for information sharing and supporter mobilization. It helps to facilitate the process of making individual participants' actions visible to relevant others and expanding the network. However, what remains uncovered is the process of organizing and the network patterns among participants in a context where membership is loosely defined. In the next section, we focus on applying a network perspective to explain what theoretical mechanisms can explain communication patterns between collective action participants.

Legitimacy and networks of information flow

One important factor influencing the boundary crossing for collective action to occur is the degree to which individuals participate in collective agenda setting and decision-making, conceptualized as the mode of engagement (Bimber et al., 2005). The mode of engagement ranges from institutional to entrepreneurial. In institutional engagement, individual contributors are situated in what is good for the collective group, and the collective agenda is determined by the central leadership (Bimber et al., 2012). It requires little initiative or creativity from individuals. One example of institutional engagement is that Amnesty International plays a formal organizing role in motivating members and interested citizens to send petition letters against human rights violations, and individuals response to this centrally organized initiative.

The engagement is entrepreneurial when individual contributors have the autonomy to shape the agenda and direction of the collective action and there is no central authority controlling the actions (Bimber et al., 2012). Self-organizing mechanisms dominate in the entrepreneurial collective action, allowing individuals to move easily in and out of their

organizational roles for the collective course and more likely to bridge the private–public boundary. One highly cited example of entrepreneurial engagement is the World Trade Organization protests in Seattle in 1999, where the loose coalition of environmental activists, human rights activists, and other supporters utilized e-mails to coordinate their actions without a central organization or institutional set of rules for engagement.

The mode of entrepreneurial engagement explains most of the online collective action cases where social media are strategically used (Bimber et al, 2012; Flanagin et al., 2006). Entrepreneurial engagement entails that collective action participants tend to be heterogeneous and the engagement evolves around weak ties (Bimber et al., 2005). It also suggests that with the development of networked technologies, ‘coordination costs can be drastically reduced and organizational demands can be met through loosely coupled networks without reliance upon fixed hierarchies or formal organizational infrastructures’ (Flanagin et al., 2006: 46). However, limited literature has looked into the network logics present in entrepreneurial collective action. We apply homophily theory and proximity theory to uncover what drives the communication dynamics among collective action participants who are self-organized through entrepreneurial engagement.

Sociopolitical legitimacy of online collective action

An organizational community consists of diverse populations of social actors that occupy different resource niches and apply a mix of general and population-specific routines and competencies for the collective course (Aldrich and Ruef, 2006). In analyzing key actors involved in entrepreneurial collective action toward advocacy, there is a need to identify different organizational populations based on their contributions to the collective cause. In this subsection, we examine the social process of obtaining legitimacy for an advocacy movement. Hypotheses are proposed.

Legitimacy is ‘a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within socially constructed system of norms, values, beliefs, and definitions’ (Suchman, 1995: 574). The achievement of legitimacy helps justify the recognition of the cause and drive the collective goal. In an online collective action space characterized by entrepreneurial engagement, legitimacy of the advocacy can be achieved in at least three dimensions. The first is the legitimacy of the goals, which refers to whether the goal pursued by advocates is socially desired. The second is the legitimacy of the means, which refers to the acceptance of the participants’ means of mobilizing resources and supporters for their collective goal. The third is the legitimacy of the outcomes, which refers to the acceptance of the promised results of the advocacy.

Legitimacy can be obtained through sociopolitical strategies, through which key stakeholders, the general public, opinion leaders, and the government authority view the advocacy goal as appropriate and right. Through strategic actions, self-organized participants attempt to produce and distribute attention to the organizational community. They fight for preferred framing, ‘convince broader publics of its cause, recruit new members, attempt to neutralize opposition framing, access solidarity, and mobilize its own adherents’ (Tufekci, 2013: 849). In the process, social media function as an important path to sociopolitical legitimacy through mobilizing the general public, validating the importance of collective

cause and broadening the scope of conflict, which used to be fulfilled by traditional news media (Gamson and Wolfsfeld, 1993).

We argue that for advocacy movements supported by social media, information sharing networks are key to achieve sociopolitical legitimacy. For online collective action, the key to achieving legitimacy is how to disseminate the information to relevant players. The next section reviews major mechanisms of information sharing networks on social media, which help explain how social media can be leveraged to achieve legitimacy.

Networking patterns of information sharing

Social media, and Twitter in particular, have been examined as a new venue for rapid communication and information flows during collective action events (Dahlberg-Grundberg, 2015; Mercea and Funk, 2014; Wang et al., 2016). Kwak et al. (2010) argued that information sharing on Twitter tends to be nonreciprocal, and thus it operates more like an information sharing network than a social network. Lotan et al. (2011) analyzed patterns of sourcing and routing information among different social groups on Twitter and concluded that Twitter plays a key role in amplifying and spreading timely information across the globe. They also found strong evidence of recurring interaction among key actor types such as mainstream media organizations, advocacy organization, individual journalists, influential regional and global actors, and other participants.

Homophily as a network attachment logic.—Several network mechanisms can be used to explain how people engage in information sharing to obtain legitimacy for their collective cause. The first is homophily, that is the tendency that people are more likely to be attracted to others with similar attitudes, beliefs, and personal characteristics (McPherson et al., 2001). The homophily network logic is built upon the notion that similarity helps ease communication, increase predictability of behavior, and establish trust (Brass, 1995). Increasing the size of the network is the first step in achieving legitimacy. It is through connecting with the same-minded people that existing contributors of a collective cause locate potential supporters who can help grow the network of social change.

There are two lines of theoretical underpinnings of homophily (Monge and Contractor, 2003; Shen and Monge, 2011): similarity-attraction and self-categorization. The similarity-attraction logic predicts that people are more likely to interact with those with similar traits (Byrne, 1971). Self-categorization logic argues that people tend to self-categorize with demographics (e.g. socioeconomic status) and they are more likely to connect to others with similar self-categorized attributes (Abrams and Hogg, 1999; Turner, 1987).

Participants of an online collective action that seek advocacy are self-organized and largely rely on social media for information sharing and coordination. As Shen and Monge (2011) pointed out, in an online organizational community with a collective goal, social attributes such as race, gender, and education may become less visible. Therefore, homophily is more likely to operate on attributes that are easily identified on the interaction platform, such as geolocation and the popularity on social media. The homophily effect of geolocation can be explained by physical proximity, which shows that individuals who are proximate are more likely to explore these of common interests and thus form communication ties (Monge and

Contractor, 2003). This is the similarity-attraction mechanism that helps the network of social change grow toward legitimacy. Therefore, we propose the following hypothesis.

H1a: Online collective action participants are more likely to share information with other participants from the same geographic region.

Furthermore, the homophily effect of popularity is an example of self-categorization mechanism. The visibility of social media allows people to easily identify to what extent a social media user is popular in the online sphere, such as seeing how many followers a Twitter account has. The popularity of a user shows individual's influence, as people with many followers can reach out to a large population of potential supporters. This process of reaching out for more potential contributors can be facilitated through influential users connecting to other influential users to achieve legitimacy for the collective cause. Therefore, we propose the following hypothesis.

H1b: Influential participants of online collective action are more likely to connect with other influential participants.

Strategic selection.—The second networking mechanism of information sharing to obtain legitimacy is strategic selection, which refers to the 'rich-get-richer' phenomenon (Barabási, 2002; Powell et al., 2005). In the context of online collective action, participants are quite strategic in selecting who they share information with. They will rely on more influential others for distribution of their contribution or spreading of updates. For example, Twitter users will tend to mention influential individual or organizational accounts when they tweet about the advocacy movement, which helps facilitate the information diffusion and obtain legitimacy of their collective goal. Another user attribute is the level of activity. Twitter accounts that are more active in tweeting will be more likely to be cited as information sources in the information sharing network. Therefore, we propose:

H2a More influential Twitter accounts tend to receive more information sharing ties than less influential accounts.

H2b: More active Twitter accounts tend to receive more information sharing ties than less active accounts.

Given the literature on sociopolitical legitimacy and organization-less organizing processes, we also want to examine how organizational Twitter accounts are mobilized in the organizational community toward a collective goal for advocacy. This is driven by the following rationale. Organizational Twitter accounts are bound to organizational norms and rules and thus represent higher level of institutional legitimacy. The network position of organizational twitter accounts needs to be examined, such as the degree centrality which indicates the number of connections each account attracts or reaches out to in the network of information sharing. Therefore, we ask the following research question:

RQ1: How are Twitter accounts of advocacy organizations and news media organizations mobilized for information sharing to obtain legitimacy during online collective action?

Method

Data and sampling

The data for this project consisted of Twitter data from an online advocacy campaign known as ‘Free Bassel’, which was created to bring about the release of an open-source coder and leader of the Syrian Creative Commons program from the detainment in Syria since March 2012. The data collection was conducted in three steps. First, all the tweets containing ‘#freebassel’ from 29 June 2012 to 20 March 2013 were collected, totaling 3636 tweets. The tweets were crawled using a publicly available app called Twitter Archiving Google Spreadsheet (TAGS). TAGS collected Twitter data using the Twitter application programming interface (API), allowing it to scrape and store Twitter data.

Second, public profiles of all the sampled Twitter accounts were collected, including number of followers, number of followees, number of tweets, geolocations, and bio. These data were mined using a custom script that used each Twitter username gathered in the previous step, then connecting to Twitter’s API and retrieving all available public profile data. Third, given no standard format for geolocation on Twitter, all the geolocation information was recoded for the identified users. The intercoder reliability between two coders was 92%. The two coders discussed all the codes of disagreement and finalized the coding for further analysis.

Measures

Influence was measured as the number of followers divided by the number of people a Twitter user was following. This operationalization shows that simply counting the number of followers may not be an accurate measure of influence. This variable is to indicate the extent a Twitter user was influential in the organizational community of the freebassel campaign. It ranged from 0 to 155,878.67.

Geolocation was measured as a categorical variable, indicating the main geolocation reported by the Twitter users. A total of 12 regions were coded, including Arab World and Middle East, Asia, Canada, Central and Latin America, Europe, South America, Syria, United States, other (such as Australia and New Zealand), and NA (not identifiable).

Level of activity was measured by the number of tweets a user had posted. This is to indicate how active a user was in the Twitter community in general. It ranged from 0 to 918,446.

Degree centrality.—The information sharing network was viewed as a directed network. The in-degree and out-degree centralities for each node were calculated to indicate the incoming and outgoing flow of information. Nodes with the highest degree centrality were selected to examine RQ1.

Analysis

The information sharing network was constructed by connecting the author of one tweet with any other users mentioned in the tweet, either through direct message or through retweet. The directional tie indicates the flow of information. The number of unique Twitter accounts was 1881, connected by 3697 ties. The exponential random graph model (ERGM) was utilized to test the hypotheses and examine the research question. The ERGM uses

maximum likelihood estimates based on Markov Chain Monte Carlo procedures for optimal estimates of parameters (Robins et al., 2007). The ERGM methods estimate the probability of tie formation among dyadic nodes compared to what would occur randomly by chance alone (Robins et al., 2007).

Data analysis was done with R, which tests the fit of hypothesized parameters and estimates a general model based on simulations of the observed data. The model fits the data when all parameters have $t < 0.10$ (Snijder et al., 2006), indicating the standard error of each estimated parameter is within a tolerable range of the actual value of the parameter, based on the original data and as compared to randomly generated networks of the same size. Specific parameters are significant when the values are within 1.96 standard errors of the parameters estimated by the model ($p < 0.05$; Robins et al., 2007). In addition, Gephi was used for network visualizations and descriptive statistics.

To answer RQ1, nodes with the highest degree centralities were selected for content analysis. Specifically, these nodes were coded into the following categories: mainstream media organizations, citizen media organizations, advocacy organizations, and public figures. The coding was conducted by going through their profile information.

Results

In the full network, nodes had an average out-degree centrality of 1.94 and an average weighted degree of 2.311. The network was sparse, with a density of 0.001, calculated using directed ties. To show the general activity of the information sharing in the network, the degree distribution followed a standard power law, with counts ranging from 1 to 302 (Figure 1). After removing isolates, the giant component (i.e. only nodes connected to the largest subnetwork) contained 1764 nodes and 3618 edges. A modularity analysis found 20 subcommunities within this network, with a resolution of 0.623 (Figure 2 for network visualization, with users of top 10 degree centralities highlighted).

The network as a whole exhibits features of having a core/periphery structure: The majority of the nodes were connected to each other near the center, and loosely connected nodes resided at the outskirts. However, the highest degree nodes were not strongly connected with each other. Of the top five nodes with the highest degree centrality, each belonged to a different modular cluster. Several high-degree nodes were structurally situated away from the core and defined their own clusters. In all, 21.16% of the users indicated that they were mainly based in Europe. Totally, 17.44% were mainly based in the United States, 10.69% in the Arab World and Middle East, 4.41% in Asia, 3.08% in Canada, 2.34% in South America, 1.44% in Syria, and 0.64% in Central and Latin America.

Table 1 summarized the estimation results of the ERGM. The following parameters were included in the model: edge as the baseline parameter to capture the density effect, nodematch ('Geolocation') and nodematch ('influence') to test the homophily effects, and nodecov ('influence') and nodecov(tweets) to test the strategic selection effect based on the community influence on Twitter and the level of activity in tweeting. The model was a good fit (Akaike information criterion = 57,414 and Bayesian information criterion = 57,479).

Homophily.

H1a stated that online collective action participants are more likely to share information with other participants from the same geographic region. This hypothesis was supported, given that the parameter estimate of 'nodematch' based on node's geolocation information was positive and significant (coefficient 0.26, $p < 0.001$). H1b stated that participants of online collective action are more likely to connect with other participants with the same level of influence. The estimated homophily effect of community influence was negative and significant (coefficient = -1.29 , $p < 0.001$). H1b thus was not supported. Contrary to the prediction, participants of similar levels of community influence were less likely to communicate with each other. This finding points to the scenario that Twitter users of heterogeneous community influence were more likely to share with each other information related to the Freebassel campaign.

Strategic selection.

H2a stated that more influential Twitter accounts tend to receive more information sharing ties than less influential accounts. The hypothesis was supported. The parameter 'nodeicov' based on influence was positive and significant, indicating that more influential participants are more likely to receive ties from others (coefficient $0.06 \text{ e-}04$, $p < 0.001$). H2b stated that more active Twitter accounts tend to receive more information sharing ties compared to less active accounts. The parameter 'nodeicov' based on influence was not significant (coefficient = $-0.37 \text{ e-}06$, $p = 0.38$). Therefore, H2b was not supported.

Sociopolitical legitimacy.

The top 47 users with a minimum out-degree of 10 were selected for content analysis of their profile information. The traffic of #freebassel tweets was mainly driven by individual accounts that claimed to be human rights advocates or activists (9 out of 47), journalists ($n = 5$), and artists ($n = 4$). Two advocacy organizations were identified: Creative Commons (CC) and Freebassel, which were run by a group of self-organized activists. Other identified accounts include one technology company, one citizen news media organization that covered Syrian news in English, and one public figure who was a scholar and an advocate for free culture.

The top 71 accounts with a minimum in-degree centrality of 10 were also selected for content analysis. There was an overlap of 19 accounts with the top 42 most active, the majority of which were individual advocates or activists. Among the accounts that were identifiable based on their profile information, 7 were advocacy and/or nonprofit organizations including Electronic Frontier Foundation, Freebassel, CC, CC Korea, Wikimedia, and Amnesty International; 4 public figure accounts such as scholars and advocates in the field of free culture; 4 citizen media organizations that cover news on human rights, technology, democracy, and freedom; 21 individual accounts who claimed to be either advocates or activists; 10 individual accounts who claimed to be journalists who speak their own voice; 5 individual accounts who claimed to be artists; 2 accounts of technology companies; and only 1 mainstream media outlet was identified, which was the official Twitter account of Al Jazeera English.

To answer RQ1, individual activists or advocates were self-organizing the information flow to bring the attention of the campaign to the public. This is supported by the finding that they made the effort to engage with advocacy organizations, citizen media organizations, technology companies and public figures. However, mainstream media organizations did not receive much information sharing ties from the participants.

Discussion and Conclusion

This study applied collective action theories and network theories to analyze the information sharing patterns among supporters of an online campaign to bring a Syrian open-software pioneer out of a prison. The network approach we incorporated in this article highlights the importance of collaboration among different social forces to achieve sociopolitical legitimacy of a collective cause. In the context of entrepreneurial collective action (i.e. bottom-up collective action initiatives organized by autonomous supporters), we conceptualized the mechanisms of Twitter in facilitating private–public boundary crossing and empirically tested how homophily and preferential attachment affected the structure of the information sharing network. With mixed methods, we uncovered how self-organized collective action participants networked with their peers and other influential social groups to achieve legitimacy of their collective goal through sharing campaign-related information.

The ERGM findings showed significant geographic homophily effect and influence heterogeneity effect. People tended to share information with others located in the same region. Furthermore, more influential participants tended to connect with less influential ones for information sharing. Strategic selection hypothesis was supported, given that more influential users tended to receive more information sharing ties from less influential others. However, more active Twitter accounts did not get more information sharing ties. This indicates that Twitter users who are actively in tweeting are not necessarily the influential ones in the Twitter community. For collective action advocates, Twitter accounts that have significantly more followers are more likely to be selected as information hub for the collective goal.

The finding on the significant geographic homophily indicates that even though the information sharing network for online collective action is global, people still tend to share information with others located in the same country or region. The network was relatively sparse, as is often the case with online networks. However, there is a clear set of core participants who act to bridging the network across different regions, such as users who claimed to be activists, journalists who were particularly interested in human rights issues, or news in Syria or Arab countries. Several public figure accounts also functioned as brokerage among different regions, particularly people who claimed to be public intellectuals on free culture or human right advocates.

The heterogeneity effect of influence and strategic selection based on user's influence in the Twitter community provided evidence that online collective action participants utilized some strategies to raise the legitimacy of their goal by sending the information to influential actors, some of whom did reciprocate the network tie. However, the self-motivated participants did not consider active twitter users as potential information hubs to help

enhance the public awareness of their collective goal. They value community influence more when thinking about strategic use of Twitter for collective goal.

A further content analysis of top contributors showed strong evidence that self-organized activists were aware of the importance of mobilizing nonprofit and advocates organizations, technology corporations, and public figures to endorse for the collective goal toward advocacy. This is consistent with the community ecological perspective that the sociopolitical environment has to be taken into account when analyzing how advocacy legitimacy is to be obtained. However, very limited number of mainstream news media organizations was mobilized as top information hubs, which address the question whether traditional news media have been ignored as sources of mobilizing social support, validating online collective action and enlarging attention scopes. Together with the finding that the information sharing network was composed of disconnected clusters and had low density, this suggests that the network was not fully realizing connections that could be made between actors with a shared common goal.

This study has several limitations. First of all, this study only examined one online campaign to uncover the information sharing patterns among different types of collective action supporters. This generates challenges for generalizing the findings. With the rigorous design of our study, the results should be retested in other contexts of advocacy campaign. Therefore, we urge Twitter researchers to apply mixed research method to both qualitatively and quantitatively investigate the structure of information sharing network on Twitter to have a more nuanced understanding of networked activism.

Second, the network analysis did not take into account the time dimension to model network dynamics for online collective action. Future work will look into the time stamps of the network data and further model the network change over time. Superficially, network attachment logics will be tested on a longitudinal basis. Some overarching questions guiding the future research agenda are what endogenous (i.e. factors that are internal to network structures) and exogenous variables (i.e. factors that are external to networks such as actor attributes) can explain the achievement of legitimacy in an online advocacy campaign? How is the structure of online information sharing network related to the outcome of an online advocacy campaign over time? What role does Twitter play in the success or failure of such campaigns?

Third, only top central accounts were content coded to identify how formal organizations were mobilized for online collective action by self-organized individuals. Future study will focus on a more concrete sample to examine the role of formal organizations in affecting the networks structures of online collective action toward advocacy. As discussed earlier, current literature on online collective action has been examining the organization-less organizing process. More research needs to be done to uncover the importance or lack of importance of such organizations.

Overall this study contributes to our knowledge about the role of Twitter in mobilizing attention to networked publics through engaging with influential others in the community and thus provides implications on strategic use of social media for obtaining legitimacy. The

application of a network perspective to examine the information sharing patterns among Twitter users helps to uncover the relational aspects of mobilizing potential supporters of a collective cause. Guided by the network theories and collective action theories, we analyzed a large-scale Twitter data to address the two mechanisms underlying the information sharing network. Significant geographic homophily and influence heterogeneity were found, suggesting that connecting with people with physical proximity and also people who are influential in a community help to grow the network size of social change. It also found that collective action contributors tended to utilize strategies to draw attention from citizen news media organizations, nonprofit advocacy organizations, public figures, and corporations to make their voice heard. This study provides some evidence to readdress the importance of formal organizations in contemporary collective action. Specifically, the role of mainstream media outlets needs to be revisited.

Acknowledgements

We would like to thank Pete Ippel, Jon Philips, Niki Korth, and the Freebassel campaign community for the support on our research. We also want to thank Dr Janet Fulk from University of Southern California for providing feedback on an earlier version of this manuscript.

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Figure 1.
Degree centrality distribution in the #freebassel information sharing network.

Figure 2. Visualization of the information sharing network for the Freebassel campaign. Top 10 nodes with the highest degree centralities were labeled. Nodes that were clustered into a modularity class were labeled with the same color. In addition, nodes were also sized by their degree of centrality, indicating the bigger a node, the more connections it had in the network.

Table 1.

Summary of the estimation model.

	Parameter	Estimates	SE
Baseline	Edge	-6.93 ***	0.02
H1a	Node match (geolocation)	0.26 ***	0.04
H1b	Node match (influence)	-1.29 ***	0.32
H2a	NodeiCov (influence)	0.66 e-05 ***	0.20 e-05
H2b	NodeiCov (tweets)	-0.36 e-06	0.41 e-06
AIC=57,414, BIC=57,479			

Note: AIC: Akaike information criterion; BIC: Bayesian information criterion.

 $p < 0.001$

**
 $p < 0.01$

*
 $p < 0.05$.